

REMARKS

The claims were rejected for double patenting. Applicant requests reconsideration. A terminal disclaimer is provided herewith. Claims 1-4, 6-18 were rejected as indefinite. Applicant requests reconsideration. The claims have been accordingly amended.

The claims were amended in the prior response. Yet, in the current 04/09/07 office action, the examination refers to the claims without the prior amendments as though the amendments were not entered. Yet, there are other indications in the examination that the amendments were entered. As such, the prosecution record may now be confused. The claims are now restated, incorporating the prior amendments in clear form for the examiner's convenience. Applicant requests that the claims be entered as now presently stated.

The present office action apparently did not examine the claims based upon the last amendments. On page 2 of the present office action, the recited claim 1 did not include the prior amendment. As such, applicant requests withdrawal of the final rejection, and requests reconsideration of the rejections. In the event that the examiner fails to enter the prior amendments, fails to enter the claims as now stated, fails to withdraw the final rejection, or fails to allow all of the claims, applicant requests a continued examination (RCE) of the above referenced original patent application. Applicant claims

1 priority to the original filing date. The Commissioner of
2 Patents and Trademarks is authorized to charge Account No.
3 010428 for any fees deemed due in connection with the filing of
4 this document in the U.S. Patent and Trademark Office.

5
6 The claims 1-4, 6, 8, 11, 12, and 14-17 were rejected as
7 unpatentable over Jordan in view of Husak. The remaining Claims
8 7, 10, and 13 were rejected as unpatentable over Jordan in view
9 of Husak in view of Berstis, aka, Bertis. Applicant requests
10 reconsideration. New claims 19 and 20 were added to recite that
11 the association and broadcasting are used to form forwarding
12 tables in the destination cache.

13
14 The claims were rejected in part because the claims do not
15 recite intended applications of the method steps for
16 broadcasting associated routing information or recite arguments
17 used in support of nonobviousness. These rejections are
18 misplaced. The examiner states, on page 4, "In other words, the
19 features upon which applicant relies, (as in applicant's
20 arguments), are NOT recited in the rejected claims". This is a
21 common perfunctory rejection often correctly used by examiners
22 in anticipation rejections, but so often misplaced in the
23 context of obviousness rejections.

24
25 In claim 1, applicant claims a method of broadcasting,
26 which method is executed solely at the proximal cache, AND NO
27 MORE. This claim clearly sets the reference perspective as
28 being the proximal cache at the proximal IPA. As such, a

potential infringer has notice that a proximal cache, so
broadcasting, that is merely broadcasting without regard to
creating a forwarding and routing table at a destination,
perfects the method and is covered by the claim. With this
broadcasting method, a routing and forwarding table at the
destination can then be maintained at a distal cache. As such,
applicant claims the method of broadcasting only in so far as
the execution is exclusively performed at the proximal cache.

There is no requirement that this claim also include
language as to the intended uses or applications of this
broadcasting method or requirement that this claim claims the
benefits of this broadcasting method, as the examiner
incorrectly suggests. An obviousness determination is focused
upon whether or not the claimed combination is obvious. The
determination of obviousness goes to both the solution as in
part claimed in claim 1 and the problem solved as stated in
argument. As to the solution in part, the combination of claim
1 has not been rejected as anticipated, but rejected for
obviousness. Anticipation can be determined by an element by
element comparison. Applicant did not address an anticipation
rejection, where elements must be recited in the claims and not
found in a single prior art reference. If applicant had argued
that claim 1 was not anticipated because the prior art does not
teach a destination routing table in combination, then the
examiner's assertion would have been correct, and the routing
table should be recited in the claims. However, the rejection
is one of obviousness that brings into consideration a whole

1 variety of related issues, such as, a long felt need without
2 solution, and of course, the prior art problems solved. Surely,
3 the examiner would not suggest that the claims must
4 specifically recite the number of years that the prior art had
5 such a long felt need, or necessarily recite the prior art
6 problems solved, yet these two things do support a
7 nonobviousness determination. Arguments that a claimed
8 invention is not obvious need not be recited in the claims. It
9 is simply enough that the combination not be anticipated, as
10 indicated in the present record, and that the combination of
11 claim 1, not be obvious. It is simply enough that the claimed
12 broadcasting method steps in combination not be suggested, yet
13 be useful. The reasons why a claim combination would not be
14 obvious need not be recited in the claims. The examiner's basis
15 for rejection because applicant's arguments are not found in
16 the claims is without merit in the present obviousness
17 determination context.

18
19 The claims are patentably distinct as written. New claims
20 19 and 20 add another step to claims 1 and 8 respectively of
21 storing the association in the destination cache at the
22 destination IPA, whereat a forwarding and routing table can be
23 maintained. Hence, the use of the claimed combination of the
24 broadcasting method of claim 1 then enables the creation of
25 forwarding and routing tables at the destination IPA, and
26 hence, enables the migration of routing information containing
27 associations between URLs and source web cache IPAs
28 subsequently stored as routing items in forwarding and routing

1 tables at destination IPAs. Significantly, the claim 1 steps
2 provide a method of broadcasting routing information that can
3 then be used by other distal caches for accomplishing the
4 migration of forwarding and routing tables. Claim 1 claims a
5 broadcasting method and not the creation of forwarding tables
6 as now claimed in new claims 19 and 20. Surely, this
7 unanticipated and unobvious broadcasting method is of some
8 value.

9
10 From a practical perspective, the examiner should realize
11 that networks have distributive caches that can be manufactured
12 by various entities. Claim 1 only covers a broadcasting cache,
13 (i.e. the proximal cache), and hence, covers a necessary
14 element to forwarding and routing table migration within an
15 entire network. Claim 1 covers a necessary novel core of the
16 invention because, without this broadcasting of routing
17 information, a distal forwarding and routing table cannot be
18 maintained by a proximal cache. Hence, claim 1 focuses on a
19 core point of novelty while providing clear notice of the scope
20 of the claim. Other systems do have caches, and do have
21 forwarding tables, and do have routing tables, but do not
22 broadcast tri-referenced associated routing information. Hence,
23 the focus of claim 1 is directed to a necessary point of
24 novelty. The threshold point of novelty is the broadcasting of
25 tri-referenced associated routing information. This
26 broadcasting does not include process steps occurring at the
27 destination cache, so that one can determine from claim 1,
28 which caches within a network are covered by claim 1, and which

1 ones are not. As such, the process steps of claim 1 are
2 executed only at the proximal IPA, give clear notice as to what
3 would infringe, and focuses the examination of this case. This
4 claim 1 strategy provides clear notice, covers a necessary
5 point of novelty, and focuses this examination on to that the
6 point of novelty, which is the broadcasting method of claim 1.

7
8 As such, the present invention of claim 1 serves to solve
9 the problems of maintaining a network of cooperative caches
10 through the migration of forwarding and routing tables by
11 broadcasting tri-referenced associated routing information. The
12 present invention solves the problem of routing table migration
13 by broadcasting from a FIRST proximal cache to a SECOND
14 destination cache at a destination IPA routing information that
15 associates a URL-Id and a THIRD source IPA. These first,
16 second, and third caches are tri-referenced in claim 1. This
17 association is recited in claim 1. Claim 1 is particularly
18 recited, novel, unobvious, and useful.

19
20 The destination cache need not necessarily store the sought
21 after web content data, but only maintain routing items that
22 define where the web content data may ultimately be located
23 through routing and ultimately stored among the cooperative
24 caches. As such, the present invention solves the problem of
25 maintaining cooperative cache forwarding and routing tables by
26 broadcasting tri-referenced associated routing information. The
27 tri-referenced associated routing information can then be used
28 to create a forwarding and routing table in any arbitrary

1 distal cache, so as to migrate the forwarding and routing table
2 information about the cooperative caches. This migration occurs
3 without regard to load balancing, polling, frequency
4 monitoring, or the mere transmission of URL requests from any
5 one cache to another cache as in Jordan.

6
7 Applicant appreciates that many web features are found in
8 various methods operating on various caches in cooperative
9 systems, and that, the examination can become quickly confused
10 if one is not careful to focus on the broadcasting steps of
11 claim 1 in reference to any sole proximal cache, as in Jordan.
12 Applicant was well aware of this potential problem. To make the
13 examination process as focused and as convenient as
14 practicable, claim 1 is directed only to the minimal novel
15 broadcasting steps executed by a single lone proximal cache, so
16 that, operational steps by any other lone cache, such as in
17 Jordan, can be quickly compared for novelty. Does this prior
18 art reference, Jordan, teach or suggest a single cooperative
19 proximal cache executing these tri-referenced associated
20 broadcasting steps? This determination is limited in scope to
21 aid in the examination process. When viewing Jordan, a like
22 reference perspective to a "proximal cache" serves to quickly
23 clarify the comparison and highlight the points of novelties.

24
25 That is, the examiner should compare apples to apples, and
26 any lone cache in Jordan can be compared to the proximal cache
27 of claim 1. However, because all of Jordan caches operate in
28 like manner, any one cache in Jordan may be used for

1 comparison. In this regard, the migration and creation of
2 forwarding and routing tables can be had through a unilateral
3 tri-referenced associated broadcast communication from a
4 broadcasting proximal cache as in claim 1. A distal cache can
5 then use this broadcast communication for building a forwarding
6 and routing table as recited in claims 19 and 20. As such,
7 claim 1 and claim 19 highlight respective bifurcated functions
8 for migrating forwarding and routing tables. Jordan relies on
9 like caches whereas the proximal cache of claim 1 and the
10 distal cache of claim 19 rely on a cooperation between
11 differently operating caches, yet another clear distinction
12 between Jordan and the present invention.

13
14 Jordan teaches a load-balancing network of like cooperative
15 caches that store web content data and maintain caching tables.
16 Jordan does not solve the problem of migrating forwarding and
17 routing tables about a network of caches. Jordan does not use
18 the claim 1 solution of transmitting from a proximal cache to a
19 destination cache tri-referenced routing information
20 associating a URL-Id with a source IPA of an alternative source
21 storing or pointing to where the URL-Id web content data may be
22 sourced. In so doing, the invention of claim 1 serves to enable
23 the migration of the forward and routing information about the
24 cooperative distal caches that can then create forwarding and
25 routing tables arbitrarily anywhere in the cooperative network.

26
27 Jordan teaches that when a cache is overloaded by a URL
28 request, the URL request is directed to another destination at

1 a destination IPA, so that the destination, that may store the
2 web content data, can then function as a new alternative
3 source. As such, the destination can retrieve the web content
4 data, store it locally, and then respond to URL requests for
5 the web content data so as to load share. As such, the
6 destination and source are one in the same. Jordan does not
7 solve the problem of migrating forwarding and routing tables
8 among cooperative distal caches, or suggests the invented
9 solution of broadcasting to a destination distal caches tri-
10 referenced routing information associating URL-Id web content
11 data and an alternative source of the web content data.
12

13 In Jordan, a proximal cache at a proximal IPA receives a
14 request for URL web content data from an originator or client
15 browser. When the proximal cache at the proximal IPA is
16 overloaded, the proximal IPA redirects the original request to
17 a destination IPA also storing the web content data. The
18 request is forwarded to an alternative source. The request
19 contains an association between the requesting IPA and the URL-
20 Id of the originator originally firstly storing the requested
21 web content data. Then, the destination cache stores the web
22 content data to serve URL-Id requests. The destination
23 retrieves the URL-Id web content data, stores it locally, and
24 updates its caching table indicating it has stored this URL web
25 content data. Jordan teaches load sharing. Jordan does not
26 teach a method of broadcasting tri-referenced routing
27 information, including an association between URL-Id and an
28 alternative source of the URL-Id web content data, but rather
the destination also storing the web

1 directs the URL request to an unloaded server storing the
2 sought after URL data. Jordan does not teach a method of
3 broadcasting an association of a source with URL data to an
4 arbitrary destination, that can then construct and maintain a
5 routing and forwarding table.

6
7 Jordan teaches a load-balancing web content data caching
8 system that maintains a logical central directory for locating
9 where requested web data is stored, preferably in the least
10 loaded cache. (Col 7 lines 60-65). In Jordan, there is a
11 guarantee that the owner indicated in the directory does store
12 the sought after web content data. By contrast, the present
13 invention makes no such guarantee, as the routing information
14 merely provides a direction through which a request could be
15 forwarded or routed until a destination cache is eventually
16 reached that does store the sought after web content data
17 specified in the URL request. The broadcasting provides the
18 routing information and not the web content data.

19
20 The present invention provides for the broadcasting of
21 routing information from a proximal IPA. The routing
22 information is a tri-referenced association between a proximal
23 cache at a proximal IPA location, a destination cache at a
24 destination IPA, and a source cache at a source IPA. The
25 associated URL request for web content data originally provided
26 at a URL IPA is an implied fourth location. The tri-referenced
27 physical locations at the proximal IPA, source IPA, and
28 destination IPA are particularly specifically stated in claim

1 1, while a fourth location of the original URL source location
2 is also inferred. This specifically required tri-referenced
3 association, as recited in claim 1, is essential to
4 understanding the novelty of claim 1. This tri-referenced of a
5 first proximal cache, a second distal destination cache, and a
6 third distal alternative source cache is recited in claim 1.
7 The URL and source IPA association in the routing information
8 during broadcasting enables the building of a forwarding and
9 routing table at the destination distal IPA. Jordan does not
10 have this tri-referenced association or the capability of
11 migrating forwarding and routing information through unilateral
12 broadcasting. Jordan does maintain a caching table, which can
13 be used to forward URL requests. However, the caching table is
14 not maintained by virtue of receiving unilateral broadcast
15 associated routing information. The caching table is not
16 maintained by virtue of receiving unilateral broadcast routing
17 information because, in Jordan, at least two of the claimed
18 tri-referenced IPA locations, if not all three, are the same
19 locations. In Jordan, the source and destination are one in the
20 same, which receives a request, retrieved the URL data, updates
21 its caching table, and becomes the alternative source, and
22 hence, the limitation to only caching tables indicating exactly
23 where is stored the requested web content data.

24
25 In view of the abstract of Jordan, a "request" indicating a
26 requester at a requester IPA and indicating the "object", that
27 is the requested URL web content data, is "forward" directly to
28 another cache, so that the "requests" are shifted, that is,

1 forward to another cache also storing the sought after web
2 content data. Jordan does not use hopping or routing in any
3 regard, as the examiner incorrectly suggests. Jordan merely
4 forwards requests when overloaded. Jordan's shifting by
5 forwarding requests perfects load balancing among caches. As
6 such, Jordan maintains a directory as a correctly named caching
7 table of all caches storing the sought after web content data
8 for forwarding when overloaded. That is, all of Jordan's caches
9 are merely source caches sharing loads by forwarding requests.
10 There is a difference between a caching table and a forwarding
11 and routing table. A caching table points directly to
12 alternative source caches having the stored data. A forwarding
13 and routing table points to another location that may or may
14 not have the stored data, but ultimately indirectly points
15 through routed hops to where the data may be ultimately found.
16 When a proximal cache is overloaded in Jordan, the proximal
17 cache sends the URL request, which is not routing information,
18 to an alternate cache location, at an alternate destination.
19 (See Figure 3) As such, each proximal cache monitors the
20 frequency of the requests, and if overloaded, each proximal
21 cache searches its caching table directory to find other caches
22 storing the same web content data, and forwards the request to
23 the alternate source cache. In this manner, load balancing and
24 web content data sharing is achieved.

25
26 Jordan forwards a URL request to a destination source
27 cache, being both a destination and a source. Each cache in
28 Jordan is a proximal cache, a destination cache, and ultimately

1 a source cache, each maintaining a respective like caching
2 table. The communicated URL requests or polling inquiries are
3 simply not routing items having a tri-referenced association
4 between a proximal cache, a destination cache, and a source
5 cache. The polling in Jordan is a bilateral communication, and
6 not a unilateral communication. Jordan does not communicate
7 from one proximal cache to a destination cache indicating that
8 data is available through, but not necessarily at, yet another
9 source cache. Jordan's caches do inquire through multicast
10 polling where the information is stored for maintaining the
11 caching table. When stored at the destination, the proximal
12 overloaded cache sends the URL request to the destination to
13 load share. In Jordan, there is no tri-referenced associated
14 routing information broadcast from a first proximal cache to a
15 second destination cache indicating a direct forwarding or
16 indirect routing path to where the web data is stored on a
17 third source cache. In Jordan, there is no routing information
18 whatsoever, but rather, mere requests to send web content data
19 to a requester or polling inquiries. In Jordan, an overloaded
20 proximal cache searches its caching table directory, and then
21 communicates and forwards the request from a proximal cache to
22 a distal destination also serving as an alternative source
23 cache. As such, Jordan does imply operation among three
24 locations including a requester, an overloaded cache, and an
25 underloaded cache. The operation in total does involve three
26 locations, a requester, a proximal cache, and a destination
27 source cache. However, the information consists of mere
28 requests, inquiries, and does not point directly or indirectly

1 to yet another third alternative source cache of the web
2 content data. In Jordan, the destination and source are one in
3 the same. The requests may be also used as the inquiries as to
4 whether or not the web content data is stored at a distal
5 cache. Hence, Jordan's communicated information is different.
6 For maintaining the caching table, Jordan's information may
7 include URL requests, the requester, and the destination. The
8 polling inquiries would not include the alternative source as
9 with the tri-referenced associated routing information of claim
10 1. Jordan provides for mere URL requests or inquiries, whereas
11 the present invention broadcasts actual tri-referenced routing
12 information. The information is different, and hence, Jordan
13 does not anticipate, and information communicated ultimately
14 serves different purposes, such as load sharing using caching
15 tables as opposed to routing information migration, and hence,
16 the arguments as to nonobviousness. Jordan solves the problem
17 of load balancing using forward requests, polling inquiries, and
18 caching tables whereas the present invention solves the problem
19 of migrating routing tables and does so by broadcasting tri-
20 referenced associated routing information. With different
21 problems solved, different objectives, and different solutions,
22 Jordan does not remotely suggest the present invention.

23
24 Specifically comparing apples to apples, Jordan teaches
25 multicasting where a cooperative cache multicast URL requests
26 or inquiries to other caches. (Col 8 line 1) These URL
27 requests may function as simple inquiries, such as, "do you
28 have this information", and the answer may be yes indicated by

1 merely sending the web content data in response. In so doing,
2 each cache polls the remaining caches to maintain the caching
3 tables. Jordan maintains a caching table by polling caches
4 through bilateral bi-referenced communications. The present
5 invention broadcasts unilateral tri-referenced routing
6 information, so that, distal caches can maintain routing and
7 forwarding tables. Jordan bilaterally multicasts bi-referenced
8 unassociated inquires to maintain caching tables in proximal
9 caches. The present invention unilaterally broadcasts tri-
10 referenced associated routing information for maintaining
11 forward and routing tables in distal caches. The two processes
12 are completely different serving different objectives for
13 solving different problems.

14
15 Jordan is clear and teaches load balancing. "Direct
16 requests 155 are sent from the clients ... to cache server".
17 (Col 5 line 55) "If an actual load imbalance is identified ...
18 the load monitor initiates a shifting of forwarded requests
19 from the overloaded cache to ... less loaded servers". (Col 6
20 line 3) "if the owner is currently overloaded ... the load
21 monitor finds an underloaded cache ... and assign it as the new
22 owner of the requested object". (Col 6 line 63) "The ownership
23 information for the object in the caching table is updated".
24 (Col 6 line 64). "The request can be forward ... to the new
25 owner". (Col 7 line 3)

26
27 The examination states that Jordan's request includes
28 source address, destination address, forwarding address, next

1 hop address, as disclosed in the request to an arbitrary cache
2 or destination upon a cache miss wherein the new entry is
3 created for the object in the caching table a routing or
4 forwarding table (Col 6 L50-67, and Fig 2a).

5
6 Is that really so? A search of specification reveals that
7 the term "HOP" is not found at all. A search of the summary and
8 preferred embodiment reveals that the term "route" is not used
9 at all. Yet, to the examiner, it is apparently clear from these
10 apparent phantom words. This is truly remarkable. Within this
11 cited text, none of these terms are mentioned at all, yet, this
12 section is cited as the basis of the rejection. This is also
13 equally remarkable. Applicant appreciates that the technology
14 is complex and involves many caches at many different locations
15 serving different uses while communicating different types of
16 information. Nonetheless, precise and careful reading is
17 required to fully understand the differences between Jordan and
18 the present invention.

19
20 The caching table shown in Fig 2a of Jordan includes
21 objects (the URL) and "Ownership" that is, the caches A, B, C
22 storing the web content data. Such specific A, B, and C caches
23 are not arbitrary, as indicated by the examiner, but indicate
24 exactly where the data can be found and exactly where the
25 request can be forwarded for load balancing and sharing. It
26 appears the examiner reads more in Jordan than what is really
27 there.

1 The plain full text does not read as the examiner
2 indicates. "FIG. 3 shows an example of a logic flow for steps
3 taken by the load monitor 120 in response to a request 125 from
4 a cache server 150 because of a cache miss. As depicted, in
5 step 201, it checks to see if the requested object/partition
6 can be found in the caching table. If not, in step, 202, a new
7 entry is created for the object/partition and a cache server is
8 assigned as its owner. After the entry is located in the
9 caching table, in step 203, the forwarding frequency 1011 is
10 updated, e.g., incremented by 1. The load monitor then examines
11 the load table 102 to see if the owner is currently overloaded
12 (and that the forwarding frequency 1011 is a significant
13 contributor thereto), in step 204. If yes, in step 205, the
14 load monitor finds an underloaded (or less loaded) cache server
15 and assign it as the new 10122 (or shared) owner 10122 of the
16 requested object. The ownership information 1012 for the object
17 in the caching table 101 is updated accordingly. Those skilled
18 in the art will appreciate that the logic flow could comprise a
19 shared 10123 or hierarchical ownership 1012 in the caching
20 table 101 or other data structure employed. The request
21 (possibly with a copy of the requested object) can then be
22 forwarded 125 to a new sole 10122 (or shared 10123) owner, in
23 step 206. Alternatively, the new owner can be requested to
24 obtain 115 an object copy from the originating object server,
25 e.g., via the Internet 110." (Col 6 lines 50-66).

26
27 As such, the examiner incorrectly cites a specific section
28 of text standing for the proposition that "On the other hand,

1 Jordan, in its clear context, explicitly teaches the process of
2 transmitting routing information, (such as source address,
3 destination address, forwarding address, next hop address, as
4 disclosed in the request) to an arbitrary cache or destination
5 upon a cache miss, wherein the new entry is created for the
6 object in a caching table, or routing or forwarding table." In
7 discussing Jordan, "in its clear context", the examiner uses
8 the terms such as "source address", "destination address",
9 "forwarding address", "forwarding table", yet a simple cursory
10 examination of the cited text upon which the examiner relies,
11 teaches no such things nor uses any of these terms. Where are
12 these terms in the cited text? How possibly could one make this
13 apparent leap, but through some kind of tortured reasoning?
14 These terms used by the examiner are not in the cited text, nor
15 suggested in any clear regard, yet asserted by the examiner, as
16 "clear". The record of the present prosecution is becoming so
17 distorted by the examiner's unsupported assertions, that this
18 record is quickly becoming, in and of itself, a strong
19 indicator of nonobviousness.

20
21 Jordan should be viewed from the exclusive perspective of
22 a lone proximal cache, as dictated by the structure of claim 1
23 of the present invention. Jordan multicasts different
24 information, that may be simple URL requests indicating a
25 requester and the URL to a source of the URL data. This is
26 opposed to broadcasting routing information associating an
27 alternative source and a URL, which does not even request the
28 URL data. In Jordan, the URL request is communicated to a

1 different location, that is, directly to a source of URL web
 2 content data for retrieving the URL content data. This is
 3 opposed to communicating to a destination cache that merely
 4 receives the routing information indicating an alternative
 5 source, which communication can then be used to build a
 6 forwarding and routing table. Jordan solves a different problem
 7 that is one of load balancing among like caches. This is
 8 opposed to solving the problem of migrating routing information
 9 for the purpose of building routing and forwarding tables in
 10 different arbitrary distal caches. With all kind due respect,
 11 Jordan does not remotely suggest the prevent invention.
 12

13 Claim 1 is patentable over Jordan and in combination with
 14 other references. However, the examiner seems to indicate a
 15 desirability of including claim language directed to building a
 16 forwarding and routing table at the destination cache. Yet, a
 17 claim covering the broadcasting by one proximal cache and the
 18 forwarding table building by another destination cache renders
 19 patent enforcement problematic, because different manufacturers
 20 could independently build the two differently operating caches.
 21 To provide clear notice to potential infringers, independent
 22 claims 1 and 8 cover the necessary broadcasting process while
 23 new claims 19 and 20 cover the subsequent building of the
 24 forwarding and routing tables in the destination caches using
 25 the broadcast routing information.
 26
 27
 28

///

1 Jordan multicasts polling bi-referenced inquiries from a
2 proximal cache to destination_caches that affirmatively respond
3 in bilateral communications for maintaining a caching table in
4 the proximal cache, which caching table is then used for
5 forwarding URL requests to those destinations storing the URL
6 data when a URL request frequency at the proximal cache is high
7 for load balancing.

8
9 The present invention of claim 1 broadcasts from the
10 proximal cache to destination caches tri-referenced routing
11 information in a unilateral broadcast communication, where the
12 routing information associates a source IPA with stored URL
13 data or stored additional routing information to a source of
14 stored URL data, so as to enable the maintenance of forwarding
15 and routing tables in the destination caches as in claims 19
16 and 20.

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1 Jordan relies on like caches all with like caching tables
2 and with like frequency monitoring, whereas the proximal cache
3 of claim 1 and the distal cache of claims 19 or 20 rely on a
4 cooperation between differently operating types of caches.
5 Jordan does not suggest such a bifurcated cache function. The
6 present invention is not required to poll other caches. The
7 present invention does not require load monitoring. The present
8 invention does not require multicast bilateral communications.
9 The present invention does not maintain limited caching tables
10 restricted to a few caches for simple load sharing only among
11 them through forwarding URL requests. The present invention
12 enables the building of generalized routing and forwarding
13 tables in arbitrary distal caches regardless of what web data
14 is stored on the distal destination caches. The present
15 invention enables cooperative caching about a network of
16 cooperative caches without regard to the frequency of URL
17 requests at any one cache. Jordan does not have these benefits.
18 The alternative distal source cache may store and source the
19 URL web content data through directed forwarding requests or
20 the alternative distal source cache may indirectly point
21 through hop routing to yet another more remote distal
22 alternative source cache storing the URL web content data, as
23 indicating the equivalence between forwarding and routing,
24 enabling any number of routing hops to locate the sought after
25 web content data stored in any one of any number cooperative
26 caches disposed anywhere within a network. The present
27 invention is a significant advancement in the art and enables a
28 comprehensive generalized network-wide caching solution.

The cited references do not teach or remotely suggest broadcasting of tri-referenced associated routing information from a FIRST proximal cache to a SECOND destination distal cache, with the routing information associating URL web content data with a THIRD alternative distal source cache. Such broadcasting of this specific tri-referenced associated routing information then enables the maintenance of forwarding and routing tables in arbitrary destination caches for forwarding and routing URL requests about a network of cooperative caches. Allowance of the claims is requested.

Respectfully Submitted

Derrick Michael Reid

Derrick Michael Reid

Derrick Michael Reid, Esq.

The Aerospace Corporation

PO Box 92957 M1/040

Los Angeles, Ca 90009-2957

Reg. No. 32,096

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